Trend Study 18-31-02

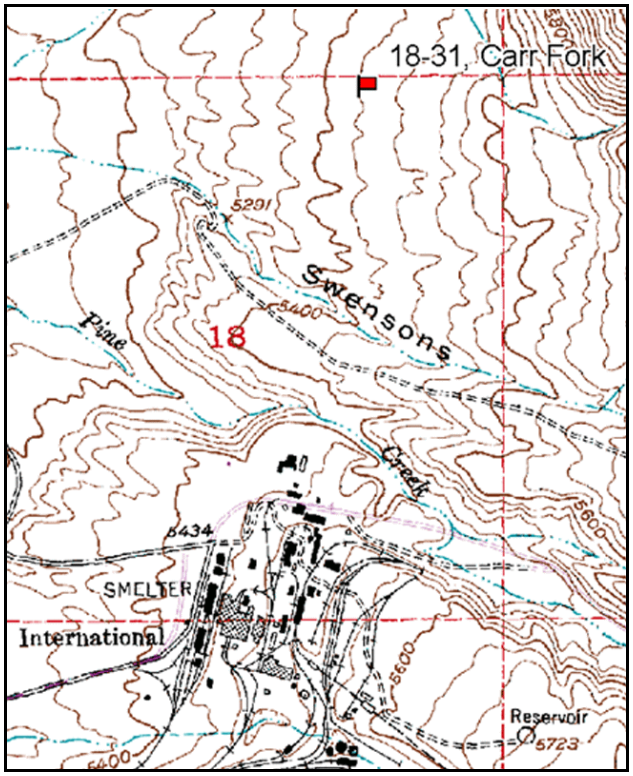
Study site name: Carr Fork . Vegetation type: Annual Grass-Forb .

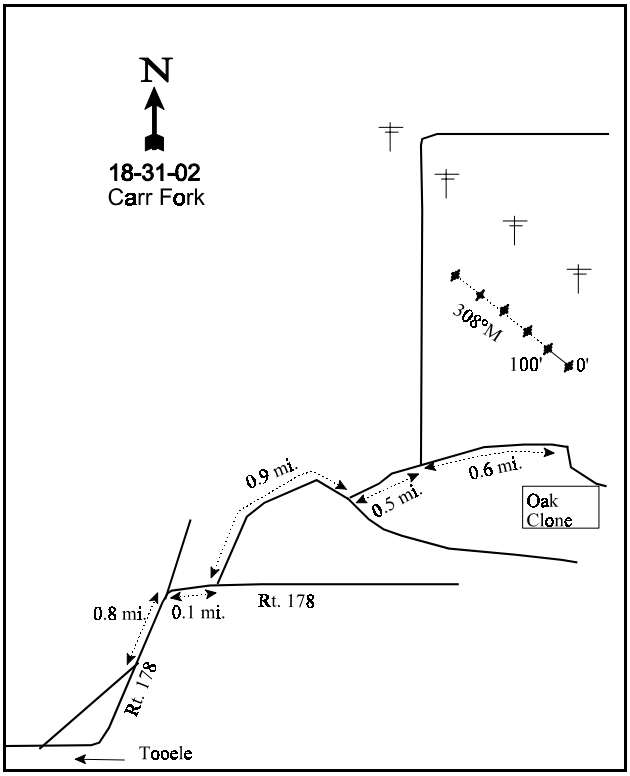
Compass bearing: frequency baseline 308 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

LOCATION DESCRIPTION

Go east on 4th north (Smelter Road) in Tooele for 1.5 miles to Ericson Road. Turn left, continue 0.8 miles to a fork in the road. Take the right fork for 0.1 miles to a locked gate (division lock). Stay on "old" road for 0.9 miles past a gate on the right. Go another 0.4 miles to a gate. Go 0.1 miles through a field of curly gum weed to a left fork. Take the left fork for 0.6 miles to a lone oak clone on the right. The 0-foot stake is on the left side of the road just before the power lines. The study is marked by green, steel fenceposts 12-18 inches in height. Roads were washed out in 2002 requiring walking about ½ mile to the site.





Map name: Bingham Canyon

Diagrammatic Sketch

Township 3S , Range 3W , Section 7

GPS: NAD 27, UTM 12S 4491053 N 396565 E

DISCUSSION

Carr Fork - Trend Study No. 18-31

The Carr Fork trend study was established in 1997 by request of the habitat manager in the Central Region. The site lies on property that originally belonged to Kennecott Copper and was then transferred to the Division of Wildlife Resources. The locality is an old tailings area for a copper mine and it was mostly composed of weeds. Because of this problem, the area was disked deeply a couple of times and drill seeded with a mixture of grasses and forbs. The study was set up to monitor the results of this treatment. The site is nearly flat with a 5% slope and an aspect to the west. The elevation is about 5,400 feet. Deer use has been light on the site. The pellet group transect read along the study site baseline showed mostly fall and spring use at 36 deer days use/acre (89 ddu/ha) in 1997, and 24 mostly winter deer days use/acre in 2002 (60 ddu/ha). The nearby drainages provide good cover, provided mainly by Gambel oak.

The soil consists of graded tailings. Effective rooting depth is estimated at 12 inches which is strongly acidic (pH 5.5). The soil has a very compacted layer at about 12 inches. Most all of the old Kennecott Copper sites have mildly acidic pH's, but this site is the most acidic we have tested. This could have been one of the reasons why the seeding was not successful. The amount of soil phosphorus is also relatively high at 51 ppm. Textural analysis shows the soil to be a clay loam. Soil temperature is relatively low for a low elevation west aspect site. It averaged only 58° F at about 13 inches in depth. Exposed bare ground was abundant in 1997, averaging 40% cover. Total protective ground cover was low which left the site subject to erosion. By 2002, protective ground cover was abundant and cover of bare ground had declined to only 6%. Most of the improvement is due to a dramatic increase in cover of bulbous bluegrass (from 6% to 26% cover). The soil is now well protected from most erosion and the erosion condition class was determined as stable in 2002.

The browse component for the site is lacking with no browse species sampled at the site in 1997. There was a small oak clone nearby, but it was not within the sampling grid. During the 2002 reading, a few transplanted bitterbrush plants were encountered. Density was estimated at only 80 plants/acre. They displayed moderate to heavy use but had good vigor. Annual leader growth averaged 3.4 inches. There was also a few white-stemmed rubber rabbitbrush plants on the site but none were encountered within the sampling strips.

The herbaceous species planted did not come in very well on this site. During the 1997 reading, the only seeded species sampled were small burnet and Lewis flax. The remaining species sampled were weeds. Cheatgrass, bulbous bluegrass, ragweed, bindweed, gumweed, and toadflax made up almost 75% of the herbaceous cover. By 2002, the site is still dominated by bulbous bluegrass and weedy forbs. Bulbous bluegrass increased significantly in nested frequency and rose from 6% cover in 1997 to 26% in 2002. It now accounts for 82% of the total grass cover or 40% of the total herbaceous cover. Seeded intermediate wheatgrass was encountered but it provided only 11% of the grass cover in 2002. The forb composition remains poor and totally dominated by weeds. Total forb cover is high averaging 30% in 1997 and 33% in 2002. Weedy forbs including ragweed, spreading dogbane, whitetop, morning glory, curlycup gumweed, sunflower, dalmatian toadflax, and moth mullen, accounted for 77% of the forb cover in 1997, increasing to 97% in 2002. Of these species, morning glory is the most abundant. It occurred in 94% of the quadrats sampled in 2002 and provided 42% of the total forb cover. Three noxious weeds, whitetop, morning glory, and dalmatian toadflax, accounted for half of the forb cover in 1997 increasing to 63% in 2002.

1997 APPARENT TREND ASSESSMENT

The trend for soil appears to be down and in poor condition because of the poor ratio of protective ground cover to bare soil and the high amount of bare soil on the site. The trend for browse is not applicable to this site because there were no browse on the site. The herbaceous understory is poor and completely dominated by weeds. It appears that very few of the seeded species ever became established on the site. This could have been a combination of the strongly acidic pH and the high amounts of phosphorus in the soil. However, what most likely determined the outcome of this treatment was that the species were planted too deep by the rangeland drill when pulled over loose, fluffy surface soil from the double disking treatment.

2002 TREND ASSESSMENT

Trend for soil is up. Cover of bare ground has declined from 40% in 1997 to 6% in 2002. Protective ground cover is abundant and the erosion condition class was determined to be stable. Trend for browse is also improved. A few seeded bitterbrush plants were encountered. These were moderate to heavily hedged but maintained good vigor. Density is low at only 80 plants/acre. Trend for the herbaceous understory is considered slightly down. There have been some improvements in the grass component. Some seeded intermediate wheatgrass was encountered along with a few other perennial species. The grass composition is still poor however, and totally dominated by bulbous bluegrass which increased significantly in nested frequency. Cover of bulbous bluegrass rose from 6% in 1997 to 26% in 2002. It now provides 82% of the grass cover. Bulbous bluegrass is a poor value perennial which is similar to cheatgrass. It dries out early in the season and provides intense competition. The forb composition remains poor and dominated by weeds. Weedy forbs including ragweed, spreading dogbane, whitetop, morning glory, curlycup gumweed, sunflower, dalmatian toadflax, and moth mullen, continue to dominate the forb composition. They accounted for 77% of the forb cover in 1997, increasing to 97% in 2002. Three noxious weeds, whitetop, morning glory, and dalmatian toadflax, accounted for half of the forb cover in 1997 increasing to 63% in 2002. White top declined significantly in nested frequency while morning glory and dalmatian toadflax increased significantly. This poor weedy understory will not improve without some sort of costly intervention or retreatment.

TREND ASSESSMENT
soil - up (5)
browse - up slightly, but still poor (4)
herbaceous understory - down slightly and dominated by weeds (2)

HERBACEOUS TRENDS --
Herd unit 18 , Study no: 31

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'97	'02	'97	'02	'97	'02
G	Agropyron intermedium	a-	b79	-	33	-	3.49
G	Bromus japonicus (a)	-	9	-	3	-	.01
G	Bromus tectorum (a)	245	254	75	75	3.02	1.90
G	Dactylis glomerata	-	4	-	1	-	.15
G	Poa bulbosa	a178	b433	52	99	5.99	25.93
G	Poa pratensis	-	3	-	1	-	.15
G	Poa secunda	a-	b14	-	7	-	.05
Total for Annual Grasses		245	263	75	78	3.02	1.91
Total for Perennial Grasses		178	533	52	141	5.99	29.78
Total for Grasses		423	796	127	219	9.02	31.70
F	Alyssum alyssoides (a)	a-	b23	-	5	-	.07
F	Ambrosia psilostachya	a33	b172	15	64	1.09	3.11
F	Apocynum cannabinum	a-	b92	-	34	-	3.20
F	Asclepias spp.	b50	a-	18	-	2.62	-
F	Aster spp.	4	3	1	1	.15	.00
F	Astragalus spp.	2	-	2	-	.01	-
F	Cardaria draba	b63	a33	28	14	.93	.60
F	Camelina microcarpa (a)	1	2	1	1	.00	.00

Type	Species	Nested Frequency '97	Nested Frequency '02	Quadrat Frequency '97	Quadrat Frequency '02	Average Cover % '97	Average Cover % '02
F	Convolvulus arvensis	287	326	81	94	11.16	13.76
F	Comandra pallida	3	-	1	-	.00	-
F	Collinsia parviflora (a)	$_{a}$1	$_{b}$41	1	11	.00	.13
F	Draba spp. (a)	4	9	2	2	.01	.01
F	Epilobium brachycarpum (a)	$_{b}$93	$_{a}$75	36	21	1.74	.15
F	Eriogonum brevicaule	-	10	-	3	-	.01
F	Gilia spp. (a)	-	1	-	1	-	.00
F	Grindelia squarrosa	104	117	39	51	1.48	1.07
F	Helianthus annuus (a)	$_{b}$211	$_{a}$31	81	14	5.36	.07
F	Lactuca serriola	$_{b}$115	$_{a}$-	47	-	1.89	-
F	Linaria dalmatica	$_{a}$52	$_{b}$113	18	41	2.96	6.12
F	Linum lewisii	$_{b}$26	$_{a}$-	10	-	.15	-
F	Onobrychis viciaefolia	-	2	-	1	-	.00
F	Phlox longifolia	$_{a}$-	$_{b}$29	-	8	-	.11
F	Polygonum douglasii (a)	26	21	9	7	.17	.06
F	Sanguisorba minor	1	7	1	3	.00	.18
F	Tragopogon dubius	$_{a}$-	$_{b}$16	-	7	-	.16
F	Veronica biloba (a)	$_{b}$15	$_{a}$-	5	-	.07	-
F	Verbascum blattaria	$_{a}$20	$_{b}$84	9	31	.50	3.70
Total for Annual Forbs		351	203	135	62	7.37	0.50
Total for Perennial Forbs		760	1004	270	352	22.98	32.06
Total for Forbs		1111	1207	405	414	30.36	32.57

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Herd unit 18 , Study no: 31

Type	Species	Strip Frequency '97	Strip Frequency '02	Average Cover % '97	Average Cover % '02
B	Purshia tridentata	0	4	-	.18
Total for Browse		0	4	0	0.17

Key Browse Annual Leader Growth
Herd unit 18 , Study no: 31

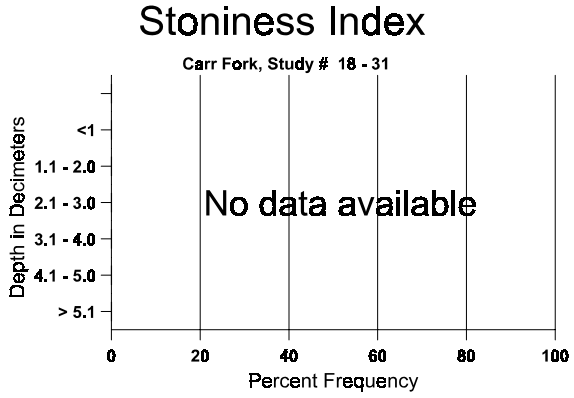
Species	Average leader growth (in) '02
Purshia tridentata	3.4

BASIC COVER --
Herd unit 18 , Study no: 31

Cover Type	Nested Frequency		Average Cover %	
	'97	'02	'97	'02
Vegetation	450	487	44.43	68.05
Rock	146	91	.78	.56
Pavement	301	265	1.79	2.04
Litter	478	472	18.82	37.32
Cryptogams	24	147	.16	4.01
Bare Ground	442	218	40.18	6.32

SOIL ANALYSIS DATA --
Herd Unit 18, Study no: 31, Carr Fork

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
12.1	58.4 (12.7)	5.5	32.0	41.4	26.6	2.2	51.0	275.2	0.4



PELLET GROUP FREQUENCY --
Herd unit 18 , Study no: 31

Type	Quadrat Frequency	
	'97	'02
Deer	2	7

Pellet Transect	
Pellet Groups per Acre	Days Use per Acre (ha)
02	02
313	24 (60)

BROWSE CHARACTERISTICS --
Herd unit 18 , Study no: 31

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Purshia tridentata																		
M	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	2	2	-	-	-	-	-	-	4	-	-	-	80	15	28	4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'97	00%	00%	00%
'02	50%	50%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'97	0	Dec:	-
	'02	80		-